Amendments to the Claims

Please replace all prior versions and listings of claims with the following listing of claims.

LISTING OF CLAIMS:

1. *(Currently Amended)* A buffer element for a communication network, the buffer element comprising:

a first buffer memory having a first ~~queue~~ depth to store communication units corresponding to a first quality of service level;

a second buffer memory having a second ~~queue~~ depth to store communication units corresponding to a second quality of service level; and

a buffer manager, coupled to the first buffer memory and the second buffer memory, to selectively store communication units in the first buffer and the second buffer based on a corresponding quality of service level of the communication units, ~~and~~ to retrieve communication units from the first buffer memory and the second buffer memory, ~~the buffer manager configured to include a queue depth adjuster~~ and to adjust at least one of the first ~~queue~~ depth of the first buffer memory or the second ~~queue~~ depth of the second buffer memory.

2. *(Currently Amended)* The buffer element of claim 1, ~~wherein the buffer manager comprises~~ further comprising:

a sorter unit coupled to the first buffer memory and the second buffer memory to selectively store a communication unit in the first buffer or the second buffer based on a quality of service level of the communication unit.

3 *(Cancelled)*.

4. *(Currently Amended)* The buffer element of claim 1, ~~wherein the depth adjuster comprises~~ further comprising:

means for iteratively searching possible depth assignments to determine the first depth and the second depth.

5. *(Original)* The buffer element of claim 4, wherein the means for searching comprises:

means for performing a steepest ascent hill climbing search.

6. *(Currently Amended)* The buffer element of claim 1, ~~wherein the depth adjuster comprises~~ further comprising:

means for determining performance characteristics of the switch.

7. *(Original)* The buffer element of claim 1, wherein the first buffer memory and the second buffer memory are regions of memory in a contiguous random access memory device.

8. *(Original)* The buffer element of claim 1, wherein the communication units are ATM cells.

9. *(Currently Amended)* A switch for a communication network, the switch comprising:

a plurality of ports;

a first buffer memory having a first ~~queue~~ depth coupled to one of the ports to store communication units corresponding to a first quality of service level;

a second buffer memory having a second ~~queue~~ depth coupled to the one of the ports to store communication units corresponding to a second quality of service level, and

a buffer manager, coupled to the first buffer memory and the second buffer memory, to selectively store communication units in the first buffer and the second buffer based on a corresponding quality of service level of the communication units, ~~and~~ to retrieve communication units from the first buffer memory and the second buffer memory, ~~the buffer manager configured to include a queue depth management mechanism~~ and to manage a depth of at least one of the first ~~queue~~ depth of the first buffer memory or the second ~~queue~~ depth of the second buffer memory.

10 *(Cancelled)*.

11. *(Original)* The switch of claim 9, wherein:

the plurality of ports comprises a plurality of output ports that output communication units from the switch to the network; and the first buffer memory and the second buffer memory are coupled to one of the plurality of output ports, to store communication units to be output to the one of the plurality of output ports.

12. *(Original)* The switch of claim 11, wherein:

each of the plurality of output ports has a respective first buffer memory and a respective second buffer memory to store communication units transmitted across the respective output port.

13. *(Original)* The switch of claim 12, wherein:

each of the plurality of output ports has a respective buffer manager to selectively store communication units in the respective first buffer and the respective second buffer based on a corresponding quality of service level of the communication units, and to retrieve communication units from the respective first buffer memory and the respective second buffer memory.

14. *(Original)* The switch of claim 9, wherein:

the plurality of ports comprises a plurality of input ports that receive communication units from the switch to the network; and

the first buffer memory and the second buffer memory are coupled to one of the plurality of input ports, to store communication units received on the one of the plurality of input ports.

15. *(Original)* The switch of claim 14, wherein:

each of the plurality of input ports has a respective first buffer memory and a respective second buffer memory to store communication units transmitted across the respective input port.

16. *(Original)* The switch of claim 15, wherein:

each of the plurality of input ports has a respective buffer manager to selectively store communication units in the respective first buffer and the respective second buffer based on a corresponding quality of service level of the communication unit, and to retrieve communication units from the respective first buffer memory and the respective second buffer memory.

17. *(Original)* The switch of claim 15, wherein the communication units are ATM cells.

18 - 32. *(Cancelled)*

33. *(New)* A method that buffers communication units in a communication network, the method comprising:

assigning a depth for each of a plurality of buffers, each buffer being designated to store communication units of a predetermined quality of service level;

selecting one of the buffers to receive a communication unit based on a quality of service level associated with the communication unit;

storing the communication unit in the selected buffer;

monitoring a characteristic in the communication network; and

adjusting the assigned depths of the plurality of buffers based on the monitored characteristic, wherein the adjustment depends on a total memory available to the plurality of buffers, the depths assigned to the plurality of buffers, and the quality of service levels of the communication units stored by the plurality of buffers.

34. *(New)* The method of claim 33, wherein the characteristic is selected from the group consisting of communication unit arrival rate for one of the quality of service levels, communication unit processing rate for one of the quality of service levels, communication unit loss rate for one of the quality of service levels and communication unit delay rate for one of the quality of service levels.

35. *(New)* The method of claim 33, wherein each of the plurality of buffers stores communication units for a single port in a communication network switch.

36. *(New)* The method of claim 35, wherein the single port is an output port.

37. *(New)* The method of claim 33, wherein the plurality of buffers stores the communication units for each port of a switch in the communication network.

38. *(New)* The method of claim 33, wherein assigning a depth for each of the plurality of buffers further comprises determining a priority level for dropped communication units for each of the quality of service levels.

39. *(New)* The method of claim 33, wherein assigning a depth for each of the plurality of buffers further comprises assigning a priority level for communication unit delay for each of the quality of service levels.

40. *(New)* The method of claim 33, wherein assigning a depth for each of the plurality of buffers further comprises performing a search of possible depth assignments.

41. *(New)* The method of claim 40, wherein performing a search of possible depth assignments further comprises performing a steepest ascent hill climbing search.

42. *(New)* The method of claim 33, wherein the communication units are ATM cells.

43. *(New)* A buffer element for a communication network, the buffer element comprising:

a first buffer memory having a first depth to store communication units corresponding to a first quality of service level;

a second buffer memory having a second depth to store communication units corresponding to a second quality of service level; and

a buffer manager, coupled to the first buffer memory and the second buffer memory, to selectively store communication units in the first buffer and the second buffer based on a corresponding quality of service level of the communication units, to retrieve communication units from the first buffer memory and the second buffer

memory, and to adjust at least one of the first depth of the first buffer memory or the second depth of the second buffer memory, based on a total memory available to the buffer element, the first and second depths, and the quality of service provided by each buffer memory.